# LET'S GO CAMPING!

**Suggested Grade**

4

**SD Mathematics Strand & Standard *(Primary for Task)***

Number Sense

4.N.3.1. Students are able to estimate sums and differences in whole numbers and money to determine if a given answer is reasonable.

**Task Summary**

Student will use estimation strategies to determine the reasonableness of a shopping list.

**Time and Context of Task**

2 class period. This task was completed in small groups.

**Materials Needed**

"Betcha" by Stuart Murphy; grocery sale fliers

**Author and Lead Teacher for this Task**

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## LET'S GO CAMPING!

Read the story "Betcha" by Stuart Murphy to students. This is a story that gives students estimation strategies in a real life setting. After you have read the story to your students and discussed how they used different estimation strategies to solve the estimation problems in the story, the students will complete the task.

**Student Task Directions**

Small group—1st day

You and the members of your group are planning a camping trip. You will be camping for two days and two nights. Your group task is to go through the grocery store fliers to determine what supplies you will need. You must come to consensus as to what you will put on your grocery list. Remember to use the information learned about good nutrition in the planning of your meals and snacks. You must have supplies for 2 breakfasts, 2 lunches, and 2 dinners. You cannot plan the same items for two different meals.

Independent task—2nd day

You have been given a list of supplies that one of the small groups decided they needed to go on their camping trip, and a dollar amount. Use estimation strategies to determine whether the dollar amount is enough to purchase the items on your list. If you have enough money, how much change will you receive from the actual purchasing of these items? If you don't have enough money, how much more money will you need to make the actual purchases of these items? Sales tax is not a consideration in this task.

Math Journal

- ⇒ How many different combinations of bills can you list that are necessary to purchase all of the items on your list?
- ⇒ List the least number of bills and coins needed to make your purchases.
- ⇒ List the largest number of bills and coins needed to make your purchases.

## CONTENT STANDARDS

**Primary Standard**

**Strand Name:** Number Sense
**SD Goal:** Students will develop and use number sense to investigate the characteristics of numbers in a variety of forms and modes of operation.
**Indicator:** Develop conjectures, predictions, or estimations in the process of problem solving and verify or justify the results.
**Standard**: 4.N.3.1. Students are able to estimate sums and differences in whole numbers and money to determine if a given answer is reasonable.

**Supplemental Standard**

**Strand:** Measurement
**SD Goal:** Students will apply systems of measurement and use appropriate measurement tools to describe and analyze the world around them.
**Indicator:** Apply measurement concepts in practical applications.
**Standard:** 4.M.1.2. Students are able to solve problems involving money including unit conversion.

**NCTM Process Standard**

**Problem solving:** Apply and adapt a variety of appropriate strategies to solve problems

**Problem-Solving Strategies**

- Estimation and check

## ASSESSMENT TOOLS

**Task Rubric**

| Standard | Advanced | Proficient | Basic | Below Basic |
|---|---|---|---|---|
| **4. N.3.1.** Students are able to estimate sums and differences in whole numbers and money to determine if a given answer is reasonable.<br><br>**4. M.1.2.** Students are able to solve problems involving money including unit conversion. | Student was able to use estimations strategies and to find the actual total of the grocery list without any error. Mental math was used, and not all calculations were necessary to complete the task. | Student was able to use estimation strategies and to find the actual total of the grocery list with out any errors. | Student has some errors in estimation, and in finding the actual total of the grocery list, but was still able to determine whether they had enough money to purchase those items. | Student has major errors in estimation, and in finding the actual total of the grocery list, and was unable to determine whether they had enough money to purchase those items. |
| **Problem Solving:** Apply and adapt a variety of appropriate strategies to solve problems. | Creative mathematical procedures were used that lead to a correct solution, and the logic was obvious, thorough, and well thought out. | The mathematical procedure that was used lead to a correct solution, and the logic in your solution was apparent. | The mathematical procedure used lead to a partially correct solution, but there were leaps in the logic that made the solution difficult to understand. | The mathematical procedure used would not lead to a correct solution, and there was no apparent logic to the solution. |

**Fourth Grade Number Sense**
**Performance Descriptors**

| | |
|---|---|
| **Advanced** | **Fourth grade students performing at the advanced level:**<br>• solve problems using multiples and factors;<br>• compare mixed numbers, proper and improper fractions;<br>• solve problems using fractions and decimals. |
| **Proficient** | **Fourth grade students performing at the proficient level:**<br>• add and subtract decimals with the same number of decimal places. |
| **Basic** | **Fourth grade students performing at the basic level:**<br>• find multiples of numbers 2 - 10;<br>• read, write, order, and compare numbers 1 through 1,000;<br>• compare proper fractions on a number line;<br>• add and subtract decimals with the same number of decimal places;<br>• find the products of two-digit numbers multiplied by one-digit;<br>• round two-digit numbers. |

**Fourth Grade Number Sense**
**ELL Performance Descriptors**

| | |
|---|---|
| **Proficient** | **Fourth grade ELL students performing at the proficient level:**<br>• find multiples of numbers 2 - 12;<br>• count by twos, threes and tens<br>• compare fractions and mixed numbers using a number line;<br>• interpret negative integers in temperature;<br>• find the products of two-digit factors and the quotient of two natural numbers with a one-digit divisor;<br>• use estimation in problem solving;<br>• use the four basic operations to solve problems involving whole numbers;<br>• add and subtract with same-place decimals;<br>• read, write, order, and compare numbers from .01 to 1,000,000;<br>• apply computational strategies in solving problems;<br>• read, write, and speak the language of mathematics. |
| **Intermediate** | **Fourth grade ELL students performing at the intermediate level:**<br>• use the four basic operations involving whole numbers to solve problems;<br>• explain in mathematical terms the sequence of steps used in solving problems;<br>• give simple oral or written responses to directed questions on topics presented in class. |
| **Basic** | **Fourth grade ELL students performing at the basic level:**<br>• apply number operations (add, subtract, multiply) to solve problems involving whole numbers;<br>• recognize and use basic mathematical terms;<br>• respond to yes or no questions and to problems presented pictorially or numerically in class. |
| **Emergent** | **Fourth grade ELL students performing at the emergent level:**<br>• solve numerical (not word) problems using addition and subtraction;<br>• copy and write numerical symbols;<br>• imitate pronunciation of numbers and mathematical terms;<br>• use non-verbal communication to express mathematical ideas. |
| **Pre-emergent** | **Fourth grade ELL students performing at the pre-emergent level:**<br>• observe and model appropriate cultural and learning behaviors from peers and adults;<br>• listen to and observe comprehensible instruction and communicate understanding non-verbally. |

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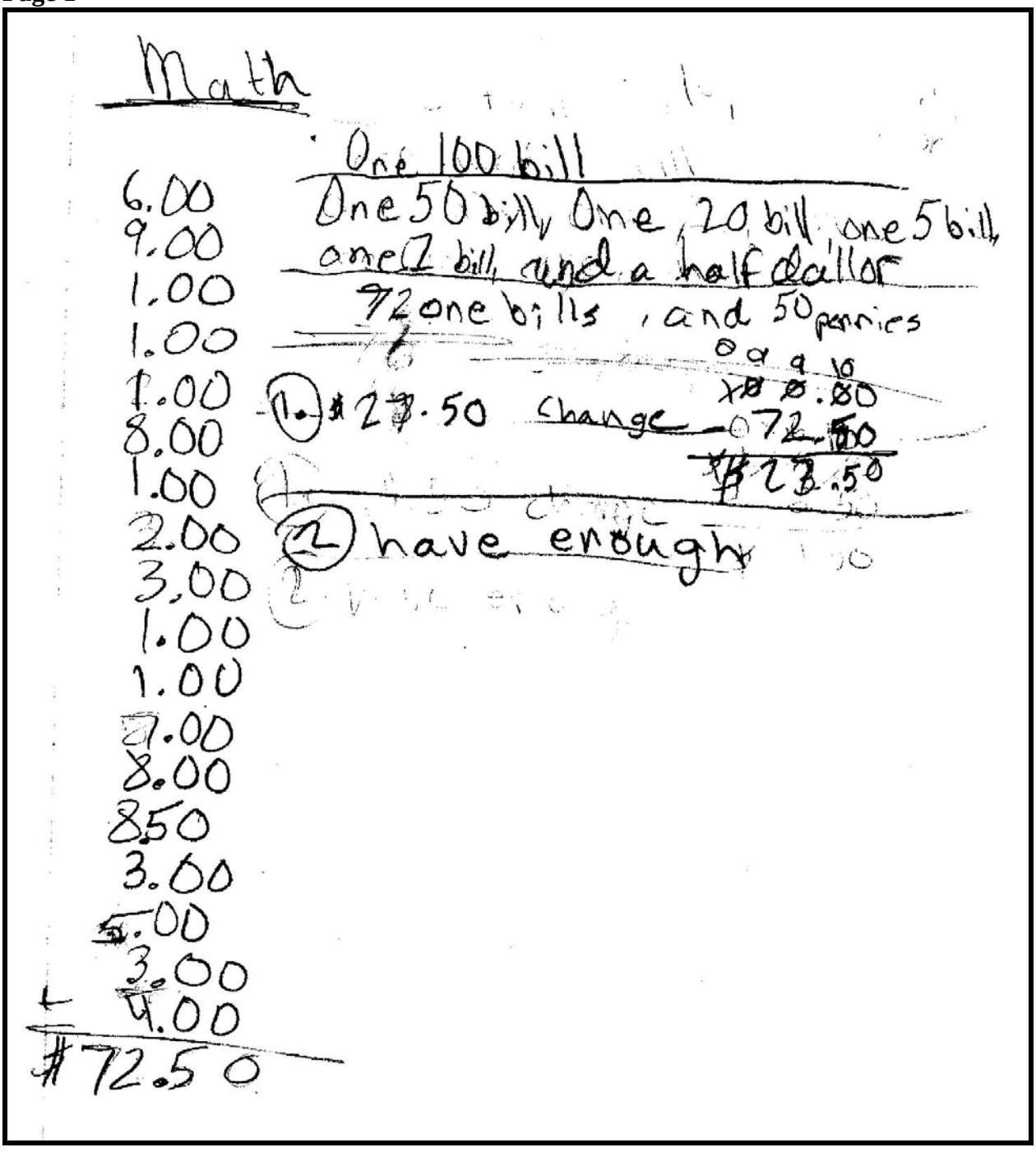
# LET'S GO CAMPING!

# Student Work Samples

As you examine the samples, consider the following questions:

- In light of the standard/s addressed and the assessment tools provided, what evidence does the work provide that students are achieving proficiency in the knowledge and skills addressed by the standard/s for the task?
- Is the task/activity well designed to help students acquire knowledge and demonstrate proficiency? Is the task/activity clearly aligned with the standards? In what ways would you adapt the task/activity to better meet the needs of your students?

**Student Work Sample #1**
**Page 1**



**Sample #1 – Page 2**

Camping grocery list: #5

| | |
|---|---|
| 2 packs | Strawberries @ $2.97 each |
| 3 lbs. | Steak @ $2.99 a pound |
| 1 bottle | 2-Liter Mountain Dew @ $0.89 each |
| 1 bottle | 2-Liter Root Beer @ $0.89 each |
| 4 lbs. | Bananas @ $0.33 a pound |
| 2 lbs. | Bacon @ $3.99 a pound |
| 1 bag | Carrots @ $0.99 a bag |
| 3 lbs. | Apples @ $0.69 a pound |
| 1 jar | Baby Dill Pickles @2.99 each |
| 1 – ½ gallon | Strawberry Milk @ $1.00 each |
| 1 – ½ gallon | Chocolate Milk @ $1.00 each |
| 2 lbs. | Pork Spareribs @ $3.54 a pound |
| 4 lbs. | Tyson Chicken leg quarters @ $1.96 a pound |
| 1 lb. | Cooked Shrimp @ $8.49 a pound |
| 1 box | Cereal bars @ $2.97 a box |
| 3 boxes | Pancakes & Sausage @ $1.69 each |
| 1 bottle | Maple Syrup @ $2.57 each |
| 2 bottles | BBQ Sauce @ 2/$4.00 |

Dollar amount: ~~100.00~~ $100.00

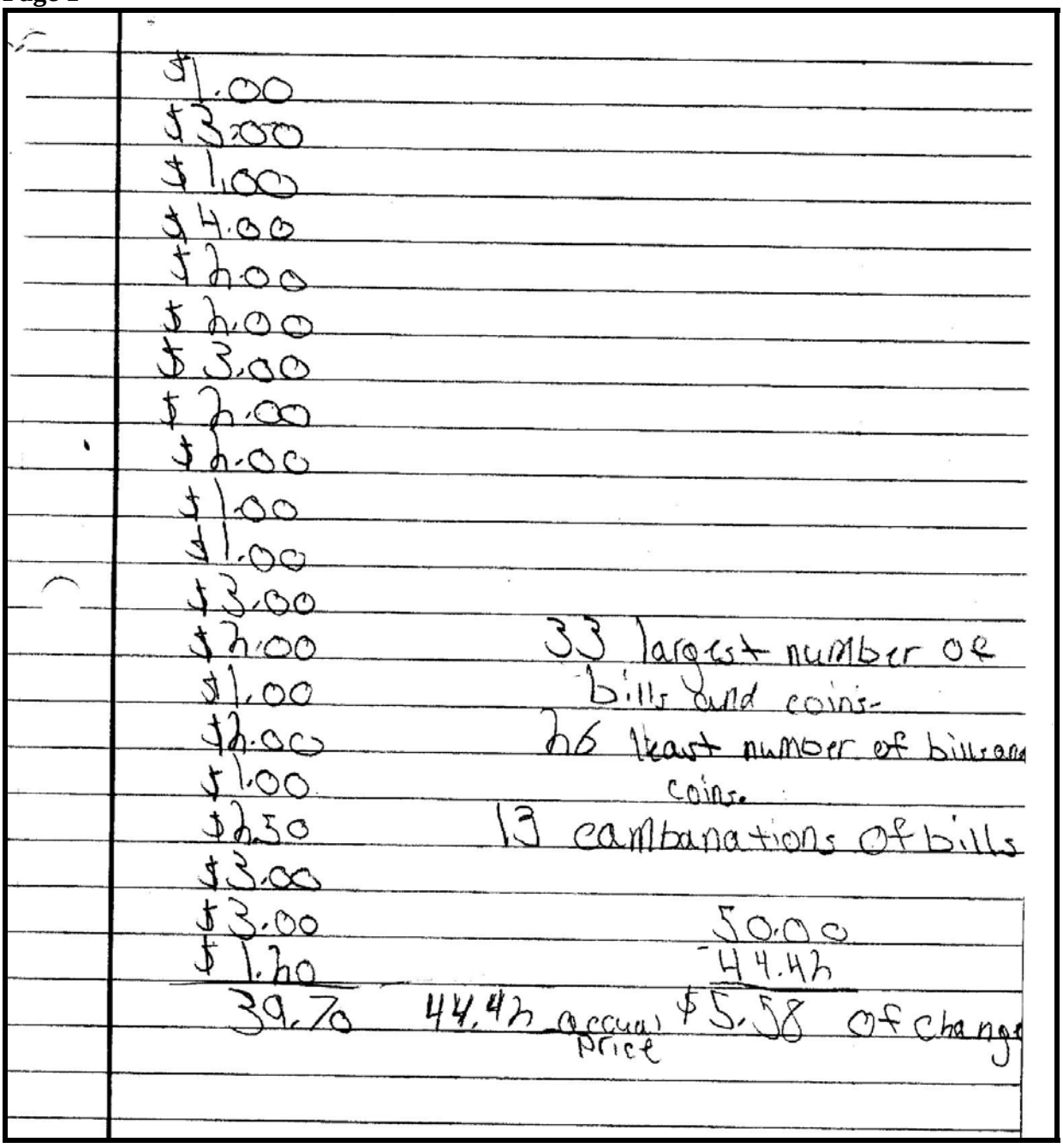
This is a list of supplies that one of the small groups decided they needed to go on their camping trip, and a dollar amount. Use estimation strategies to determine whether or not the dollar amount is enough to purchase the items on your list.

- If you have enough money, how much change will you receive after making your camping purchases?
- If you don't have enough money, how much more money do you need to purchase the supplies you will need?

**Looking at Student Work – Instructor notes and rating for work sample #1:**

Proficient Level. The student correctly used estimation strategies and found actual cost without errors to determine if answer was reasonable.

**Student Work Sample #2**
**Page 1**



**Sample #2 – Page 2**

Camping grocery list: #2

| | |
|---|---|
| 5 lbs. | Russet Potatoes @ $0.99 a pound |
| 3 cans | Butter Kernel Veggies @ $0.99 each |
| 1 pack | John Morrell Jumbo Franks @ $0.99 each |
| 1 gallon | Tropicana Orange juice @ $3.99 a gallon |
| 1 box | Toaster Strudels @ $2.00 a box |
| 1 jar | Dill Pickles @ $1.99 each |
| 1 whole | Golden Pineapple @ $2.99 each |
| 2–6-packs | Fruit 2 O bottled water @ $2.00 per pack |
| 1 box | Act II Microwave popcorn @ $1.97 each |
| 1 bottle | 2 Liter Bottle of Sprite @ $0.99 each |
| 1 bottle | Hunts Ketchup @ $0.99 each |
| 2 packs | Hot dog buns @ $1.49 each |
| 1 box | Captain Crunch cereal @ $2.00 each |
| 1--½ gallon | Milk @ $1.00 each |
| 1 jar | Strawberry jelly @ $1.99 each |
| 1 jar | Peanut butter @ $0.99 each |
| 1 loaf | Wheat Bread @ $2.49 each |
| 1lb. | Deli ham @ $2.94 a pound |
| 1 jar | Miracle Whip @ $2.97 each |
| 1 pack | American cheese slices @ $1.19 each |

Dollar amount: $50.00

This is a list of supplies that one of the small groups decided they needed to go on their camping trip, and a dollar amount. Use estimation strategies to determine whether or not the dollar amount is enough to purchase the items on your list.

- If you have enough money, how much change will you receive after making your camping purchases?
- If you don't have enough money, how much more money do you need to purchase the supplies you will need?

**Looking at Student Work – Instructor notes and rating for work sample #2:**

Basic Level. The student has errors in estimation, but was able to determine whether or not he had enough money.

## INSTRUCTIONAL NOTES

**Introduction Activity**

Give each student a sandwich size Baggies with coins and bills in it. These should be prepared ahead of time in groups of three or four so that no more than four have the same amount in each. Each student should empty their bag onto their desk and count the money in their Baggie. When everyone has counted their money, they should go throughout the room finding the student who has the same amount of money that is in their baggie. Discuss as a large group what strategies were used to find the person who had the same amount as they did. This activity is used to determine who works together during the group activity.

**Common Strategies**

Calculators were used in determining the actual cost of the items when determining how much change was received, or how much more money was needed to complete the purchases.

**Common Misunderstandings**

Some students many not have the background knowledge of how to read a grocery flier. For example, some students will want to purchase a bunch of bananas for their camping trip. They see the $0.33/lb price in the flier and assume all of the bananas in the bunch can be purchased for just $0.33. Students will have to make estimations on the weight of these types of items, and calculate the price accordingly. Group collaboration and consensus helped with this misunderstanding.

**Appropriate Technology**

This site offers information about U.S. currency. It includes a history of money, pictures, and information about counterfeit protection strategies. A teacher's guide with links to other money-related sites is also provided.

http://woodrow.mpls.frb.fed.us/econed/curric/money.cfm

**Cultural Connections**

Students could research money from other countries, and compare it to US currency.

## Literature Connections

Pigs will be Pigs, by Amy Axelrod, Sharon McGinley-Nally (Illustrator) Axelrod

This story recounts how the hungry Pig family learns about buying power as the family members turn the house upside down looking for enough money to buy dinner at the local restaurant.

Pigs Go to Market, by Amy Axelrod, Sharon McGinley-Nally (Illustrator) Axelrod

The Penny Pot, Stuart J. Murphy, Lynne Cravath (Illustrator)

Art teacher Fran is painting kids' faces at the school fair for 50 cents each. But Jessie has only three dimes, a nickel and four pennies, which is just 39 cents. So Fran puts out a "penny pot" for spare change. Miguel has a quarter, a nickel, two dimes and three pennies—53 cents. He adds three cents to the penny pot. All the other kids contribute, too. Soon there's more than enough for Jessie.

If You Made a Million, by David M. Schwartz, Steven Kellogg (Illustrator)

This book introduces the idea of a million, develops money concepts, and discusses bank accounts and interest.

Alexander, Who Used to Be Rich Last Sunday, Judith Viorst

This book tells the story of how Alexander and his money are quickly parted.

Deena's Lucky Penny, by Barbara Derubertis, et al

This book follows the adventures of Deena as she accumulates five pennies, exchanges the pennies for a nickel, exchanges two nickels for a dime, and so on until she ends up with a dollar, which she uses to buy a birthday present for her mother.

Betcha, by by Stuart J. Murphy, S. D. Schindler (Illustrator)

At stake: two free tickets to the All-Star Game. In addition, all you have to do is guess the correct number of jellybeans in a jar at the Planet Toys store. One particularly smart boy has an idea: Why guess when you can estimate. He plays a game with his friend as they head over to the store on the bus. With four people per row, 10 rows, and a few folks standing in the aisle, he estimates that there are 43 people on the bus.

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## Resources

**SD Mathematics Content Standards**
http://www.doe.sd.gov/contentstandards/math/index.asp

**SD Assessment and Testing**
http://www.doe.sd.gov/octa/assessment/index.asp

**The National Assessment of Educational Progress (NAEP)**
http://www.doe.sd.gov/octa/assessment/naep/index.asp

**National Council of Teachers of Mathematics**
http://nctm.org/

**Looking at Student Work**
http://www.lasw.org/index.html